

CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A process of leveling a vehicle including an electronic ride height control system
5 in communication with a plurality of fluid suspension elements, comprising:

measuring an angle of a vehicle axis relative to a horizontal plane;

communicating information relating to the angle to a controller;

processing the information with the controller to generate leveling instructions;

and
10 automatically adjusting at least one of the plurality of fluid suspension elements
via the electronic ride height control system based on the leveling instructions, wherein the angle
of the vehicle axis relative to the horizontal plane is changed, whereby the vehicle axis is at least
one of leveled relative to the horizontal plane and brought closer to being leveled relative to the
horizontal plane.
- 15 2. The process of claim 1 comprising outputting the information to an operator via at
least one of a display and an audible indicator, and wherein said measuring is performed with an
electronic sensor.
3. The process of claim 2 wherein said measuring, communicating and outputting
steps are performed as the vehicle is moving to update the operator of the angle as the vehicle is
20 moving.
4. The process of claim 1 comprising outputting the information to an operator to
inform the operator of at least one of whether or not the vehicle axis is level relative to the
horizontal plane, whether or not the vehicle axis is being leveled relative to the horizontal plane,

whether or not the vehicle axis is within a range of potential angles that will enable the vehicle axis to be leveled relative to the horizontal plane, and whether or not the vehicle axis is leveled to a tolerance relative to the horizontal plane.

5 5. The process of claim 1 wherein the controller at least one of controls and overrides the electronic height control system in said adjusting step.

6. The process of claim 1 wherein the vehicle axis is at least one of a side to side axis of the vehicle and a fore to aft axis of the vehicle.

7. A system for leveling a vehicle having an existing electronic ride height control system in communication with a plurality of fluid suspension elements comprising:

10 a sensor that measures an orientation of a vehicle axis relative to a horizontal plane; and

 a controller in communication with the sensor that processes information relating to the orientation and that generates leveling instructions based on the information, the controller operable in a self leveling mode, wherein the controller is enabled to automatically adjust the at least one of the plurality of fluid suspension elements via the electronic ride height control system based on the leveling instructions, wherein the orientation of the vehicle axis relative to the horizontal plane is changed, and a standard leveling mode, wherein the controller is incapable of automatically adjusting at least one of the plurality of fluid suspension elements via the electronic ride height control, so that the electronic ride height control can operate without being controlled by the controller.

15 20

8. The system of claim 7 wherein the controller is an electronic control unit, and wherein the measuring means is at least one leveling sensor.

9. The system of claim 8 wherein the controller adjusts the at least one of the plurality of suspension elements so that the vehicle axis is at least one of leveled relative to the horizontal plane and brought closer to being leveled relative to the horizontal plane.

10. The system of claim 9 wherein the controller is in communication with the electronic ride height control system, and wherein the controller at least one of controls and overrides the electronic ride height control system in said self leveling mode.

11. A process of providing vehicle leveling information comprising:

measuring an orientation of a vehicle axis relative to a horizontal plane as the vehicle moves across a plurality of potential parking locations;

10 communicating information relating to the orientation to a controller;

processing the information with the controller to generate output, the output indicative of at least one of whether or not the vehicle axis is level relative to the horizontal plane, whether or not the vehicle axis is being leveled relative to the horizontal plane, whether or not the vehicle axis is within a range of potential orientations that will enable the vehicle axis to be leveled relative to the horizontal plane, and whether or not the vehicle axis is leveled the best that the axis can be relative to the horizontal plane; and

communicating the output to an operator via at least one of a display and an audible indicator, wherein the operator is updated on the leveling orientation of the vehicle axis relative to the horizontal plane so that the operator can select at least one of the plurality of parking locations as the vehicle moves across the parking locations.

12. The process of claim 11 comprising at least one of controlling and overriding an electronic ride height control system of the vehicle, and automatically adjusting the orientation of the vehicle axis relative to the horizontal plane based on the output.

13. The process of claim 12 comprising repeating all of said steps until the vehicle axis is parallel to the horizontal plane.

14. The process of claim 11 wherein the controller interfaces with a ride height control system of the vehicle and controls the system to reorient the vehicle axis parallel to the horizontal plane.

15. The process of claim 11 wherein the output is communicated to the operator via the display, the display including a plurality of LEDs that illuminate in a manner representing a leveling orientation of at least two vehicle axes relative to the horizontal plane.

16. The process of claim 15 wherein the at least two vehicle axes are the fore to aft axis and the side to side axis.

17. A process for leveling a vehicle comprising:
sensing the orientation of a vehicle relative to a horizontal plane as the vehicle moves;
processing data relating to the sensed orientation with a controller; and
adjusting the orientation of the vehicle relative to the horizontal plane with the controller, based on the data, as the vehicle moves.

18. The process of claim 17 comprising outputting the data to an operator to inform the operator of at least one of whether or not the vehicle axis is level relative to the horizontal plane, whether or not the vehicle axis is being leveled relative to the horizontal plane, whether or not the vehicle axis is within a range of potential orientations that will enable the vehicle axis to be leveled relative to the horizontal plane, and whether or not the vehicle axis is leveled to a tolerance relative to the horizontal plane, wherein said outputting updates the operator on the leveling orientation of the vehicle relative to the horizontal plane as the vehicle moves.

19. The process of claim 17 wherein the vehicle includes an electronic ride height control system, wherein the controller is in communication with the ride height control system, and wherein the controller at least one of controls and overrides the ride height control system to perform said adjusting.

5 20. The process of claim 19 wherein the vehicle includes an air suspension element, and wherein the controller, via the electronic ride height control system, changes the amount of air in the air suspension element during said adjusting.

21. The process of claim 17 wherein the sensing is performed by at least one of an electronic side to side axis leveling sensor and an electronic fore to aft axis leveling sensor.

10 22. The process of claim 17 wherein in said adjusting step said vehicle is leveled relative to said horizontal plane.

23. A leveling system for a vehicle comprising:
a sensor that measures how level at least one of a fore to aft vehicle axis and a side to side vehicle axis is relative to a pre-selected plane and generates leveling data;
15 a controller in communication with the sensor, said controller operating in a dynamic mode, wherein the controller analyzes the leveling data to generate leveling information and outputs the leveling information to at least one of a display and an audible indicator to provide an operator with the leveling information as the vehicle traverses a potential parking area, and a leveling mode, wherein the controller uses the leveling data to automatically level to
20 an extent at least one of the fore to aft vehicle axis and the side to side vehicle axis relative to the pre-selected plane without input from the operator.

24. The leveling system of claim 23 wherein the pre-selected plane is a horizontal plane.

25. The leveling system of claim 23 wherein the extent renders the at least one of the fore to aft vehicle axis and the side to side vehicle axis substantially parallel to the pre-selected plane.

26. The leveling system of claim 23 wherein the extent puts the at least one of the
5 fore to aft vehicle axis and the side to side vehicle axis within a tolerance of parallel to the pre-selected plane.

27. The leveling system of claim 23 wherein the vehicle includes an electronic ride height control system in communication with a suspension element, wherein the controller is in communication with the electronic ride height control system, and wherein the controller at least
10 one of controls and overrides the ride height control system in said leveling mode to adjust the suspension element.